IN THE CLAIMS:

1. (currently amended): An apparatus for monitoring position, the apparatus comprising:

a cylinder having walls defining an interior and further having a length defined between a first end and a second end wherein the first end is opposite to the second end of the cylinder;

a first wall at the first end of the cylinder;

a shaft having a length defined between a first end and a second end wherein a portion of the shaft is within the interior of the cylinder and wherein the shaft moves within the interior of the cylinder;

a second wall at the second end of the cylinder;

an aperture within the first wall at the first end wherein light projects through the aperture into the cylinder; and

a sensor ~~within~~ at the second wall of the cylinder wherein the sensor detects intensity of light within the interior of the cylinder at the second end of the cylinder which is not absorbed by the shaft and the interior of the cylinder wherein the intensity of light detected by the sensor at the second wall corresponds to a position of the shaft in the interior of the cylinder.

2. (previously presented): The apparatus of Claim 1 wherein the second wall encloses the cylinder.

3. (original): The apparatus of Claim 1 further comprising:

a second shaft within the cylinder.

4. (original): The apparatus of Claim 1 further comprising:

a fluid within the cylinder.

5. (original): The apparatus of Claim 1 wherein the sensor is adjacent to the second end of the cylinder.

6. (original): The apparatus of Claim 1 wherein the aperture is at a center of the wall.

7. (original): The apparatus of Claim 1 further comprising:

a light source adjacent to the first end of the wall wherein the light source projects the light through the aperture.

8. (canceled)

9. (currently amended): A system for monitoring position, the system comprising:

a cylinder having walls defining an interior wherein the cylinder has a shaft within the interior wherein the shaft extends through a first wall of the cylinder and wherein the shaft is movable within the interior of the cylinder and further wherein the cylinder has an aperture in the first wall adjacent to the shaft wherein light is continuously projected into the interior of the cylinder via the aperture; and

a sensor on a second wall of the cylinder wherein the first wall is opposite to the second wall of the cylinder wherein the sensor is located within the interior of the cylinder wherein the sensor extends inward from the second wall ~~with respect~~ to the

interior of the cylinder wherein the sensor detects an amount of light within the cylinder at the second wall which is not absorbed by the shaft and further wherein the amount of light detected by the sensor corresponds to a position of the shaft within the interior of the cylinder.

10. (currently amended): The system of Claim 9 wherein the sensor is located at a center of the second wall ~~within the cylinder on a second wall opposite the aperture~~.

11. (original): The system of Claim 9 further comprising:

a fluid within the system.

12. (currently amended): The system of Claim 9 further comprising:

a head attached to the shaft wherein the head is located between the sensor and the aperture.

13. (original): The system of Claim 9 further comprising:

a second shaft within the cylinder wherein the second shaft is movable within the cylinder.

14. (original): The system of Claim 9 further comprising:

a window within the aperture.

15. (original): The system of Claim 9 further comprising:

a light source adjacent to the aperture wherein the light source projects the light through the aperture.

16. (original): The system of Claim 9 further comprising:

a processor connected to the sensor.

17. (original): The system of Claim 9 further comprising:

a coating on the shaft wherein the coating absorbs light.

18. (currently amended): A method for measuring a position within a cylinder having walls defining an interior wherein the cylinder has an interior surface and an exterior surface wherein the cylinder has a length defined between a first wall and a second wall wherein the cylinder has an aperture ~~within one of the walls~~ formed in the first wall and further wherein the cylinder has a head within the interior wherein the head is movable within the interior of the cylinder from the first wall to the second wall, the method comprising the steps of:

directing light into the interior of the cylinder through the aperture;

attaching a light sensor to the interior surface of the cylinder at the second wall wherein the light sensor is located within ~~extends inward with respect to~~ the interior of the cylinder wherein the head is located between the aperture and the light sensor;

detecting an amount of the light in the interior of the cylinder at the second wall which is not absorbed by the interior surface and the head of the cylinder wherein the light sensor detects the amount of light received from the aperture in the first wall; and

determining a position of the head in the interior of the cylinder wherein the position of the head corresponds to the amount of light detected by the light sensor.

19. (currently amended): The method of Claim 18 further comprising the step of:

moving the head within the cylinder between the first end and the second end.

20. (original): The method of Claim 18 further comprising the step of:

placing a fluid within the cylinder.

21. (previously presented): The method of Claim 18 further comprising the step of:

connecting a magnet to the head of the cylinder wherein the magnet is adjacent to the exterior surface of the cylinder.

22. (new): A method for measuring a position within a cylinder having walls defining an interior wherein the cylinder has an interior surface and an exterior surface wherein the cylinder has an aperture within one of the walls and further wherein the cylinder has a head within the interior wherein the head is movable within the interior of the cylinder, the method comprising the steps of:

directing light into the interior of the cylinder through the aperture;

attaching a light sensor to the interior surface of the cylinder wherein the light sensor extends inward with respect to the interior of the cylinder;

detecting an amount of the light in the interior of the cylinder which is not absorbed by the interior surface and the head of the cylinder wherein the light sensor detects the amount of light;

determining a position of the head in the interior of the cylinder wherein the position of the head corresponds to the amount of light detected by the light sensor; and

connecting a magnet to the head of the cylinder wherein the magnet is adjacent to the exterior surface of the cylinder.